

agricultural situation

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FARMING'S FUTURE

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What does the future hold for U.S. farming? Kenneth R. Farrell, Deputy Administrator of USDA's Economic Research Service, addressed that question in a talk before the 1976 National Farm Marketing Conference. The following was taken from Mr. Farrell's speech. . .

Before exploring the future structure and organization of U.S. agriculture, let's first look at the economic situation of 1976.

After 5 turbulent years, several important features stand out:

Agriculture is operating in essentially open and highly interdependent domestic and world markets in which world food demand has been pressing strongly for available supplies for the past 4 years.

Today, U.S. agriculture stands in a generally strong economic position: Farm prices and income remain generally favorable

although well below the peaks of 1973-74, farm assets and proprietor equities are high, and there's little slack in the farm economy as a whole. Also, the serious distortions in livestock/feed relationships of a few years ago have greatly lessened and relationships are expected to be more favorable to livestock producers over the next several years.

We're generally in a strong competitive position in world food markets. While it's unrealistic to expect farm exports to continue growing at recent rates, we should be able to maintain an export market growth averaging 3 to 4 percent a year.

Despite the healthy economic condition of today's agriculture, the American farmer remains quite vulnerable to the vagaries of weather, trade, and inflation.

While the future cannot be foreseen, the most likely scenario for the next 5 to 10 years involves the following:

Gradual but significant growth in demand for U.S. farm products, both here and abroad, averaging 1.5 to 1.75 percent a year.

Continued increases in productivity and output derived mainly from further substitution of capital for land and labor, and better use of available technology. Depending on weather and price relationships, U.S. production is expected to grow an average of 1 to 3 percent a year.

Neither chronic surpluses nor shortages seem likely, though production, farm prices, and income may fluctuate widely from year to year.

Looking more closely at what such a scenario means for the structure and organization of American agriculture, seven principal features stand out. . .

First, the long-term trend toward

fewer but larger farms will continue. During 1960-74, farm numbers shrank from 4 million to 2.8 million—a drop of 30 percent. Nearly half that loss centered on farms with 500 acres or less. Meantime, farms with 500 acres or more increased significantly.

By 1980, farm numbers may decline further to about 2.2 million, with the decline again focused on small farms while the number of large farms increases.

Second, commercial production will become increasingly concentrated in the hands of fewer, more competent managers. Today, one-sixth of all farms account for 70 percent of farm cash receipts and 60 percent of realized net farm income.

By 1980-85, farms with annual sales of \$100,000 or more may about double to 8 percent of all farms and generate 60 percent of all cash receipts, versus less than 50 percent right now.

To illustrate more fully this shift to fewer but larger and better managed farm firms, here are the current projections for dairy, hog, and beef producers. . .

Dairy: By 1980, dairy farms will number about 203,000, versus 380,000 in recent years. Ten percent fewer cows will yield 14 percent more milk per cow, and herds of 100 and over will account for 7 percent by number, but 30 percent of total output.

Hogs: In 1950, there were 3 million producers; and in 1973, only 700,000. By 1985, there may be as few as 220,000 producers, and 90 percent of sales will be from farmers selling 200 or more hogs.

Beef: Average size of beef cow herds is expected to increase rapidly in each region. Consolidation of farms and ranches, plus ability to use existing forages more effectively because of larger size, form

the major reasons for expected growth in beef cow herds. Also, cattle feeding will continue to concentrate in lots of 20,000 head or more.

Third, producers will continue to separate ownership from use of land and other high-capital resources. Currently, lease or rental accounts for more than 40 percent of all land used in farming. High land values and stepped-up capital require-

ments will further convince farmers to lease land and equipment.

Fourth, corporate ownership of farms will increase, but not through a takeover by large outside corporations. Rather, the traditional family-type farm will lean more towards incorporation as a means of acquiring capital, exploiting tax advantages, and easing the transfer of farm property from one generation to another.



Currently, 1 percent of all farms accounting for 14 percent of total output are legally incorporated. Most are "closely held" firms with 10 or fewer shareholders. And, except for legal form, 90 percent of all farm corporations are indistinguishable from other farms operated by single owners and partnerships.

Whether corporate or not, the family farm will remain the dominant form of organization in American agriculture and will continue to account for 90 percent of all farms. But the family farm of 1980 will be more modern, sophisticated, and commercially oriented.

Fifth, capital requirements for all size and sales classes of farms will continue to escalate for both operating and expanding farm holdings.

While a substantial amount of additional land could be brought into production, much of the increased output of food projected for the next 5 to 10 years likely will come from consolidation of smaller into larger units and from more extensive and better use of technology to minimize labor inputs, increase yields, and lower per unit production costs.

Sixth, while numbers of large full-time farms will increase, so will the importance of part-time farms. For many of today's smaller and medium-sized farms, off-farm employment for the operator and his family may be the only way to remain in farming and achieve an acceptable level of living.

On the other hand, these types of farms may come into heavy demand by people with city jobs who wish to supplement their income by farming.

In 1930, less than one in six farms was part-time. But today, with good transportation and communications, and more job opportunities in non-metro areas, two of three farm families earn more than half their income from non-farm sources. If the population continues to shift to non-metro locations, and if industries continue to decentralize, the share of farm families earning a major part of their income off the farm will climb even higher by 1980-85.

Seventh, there'll be tighter coordination of farm production, input, and market sectors in the agribusiness complex. In a few cases—broilers, eggs, turkeys, sugarcane, citrus, specialized vegetables—unified, vertically integrated systems have already come about, linking suppliers, farmers, processors, and marketers. Farmers themselves have integrated both forward into their markets and backward into supply of inputs through their cooperatives.

For many products that are likely to face unstable markets, we can expect much more extensive use of forward contracts, futures market contracts, and private crop storage arrangements. Instability may also encourage greater crop and livestock diversification.

Still, large segments of American agriculture aren't about to become part of a highly integrated, industrialized system. It's true that cattle feeding is moving toward more highly integrated arrangements, and that there's some similar movement in the hog industry.

Nonetheless, vertical integration probably won't become the dominant form of hog production over the next 5 to 10 years. Milk and grain production seem even less likely to move in that direction.

A BALE FROM START TO FINISH

A typical bale of U.S. cotton covers a lot of ground before it winds up on a spool of sewing thread or in a pair of sturdy denim jeans. And each step along the way it picks up extra costs that contribute to the overall value of textile products.

Since so many complex operations go into turning raw cotton into a usable item, the cost of the raw fiber usually accounts for only about 10 percent of the final value of the product. This amount depends, though, on the type of product and the extent of processing involved.

There's good reason for keeping tabs on a bale of cotton as it progresses from mill to market. Such information alerts the textile industry to shifts in the relative importance among fiber markets and sharpens the total cotton supply-demand picture.

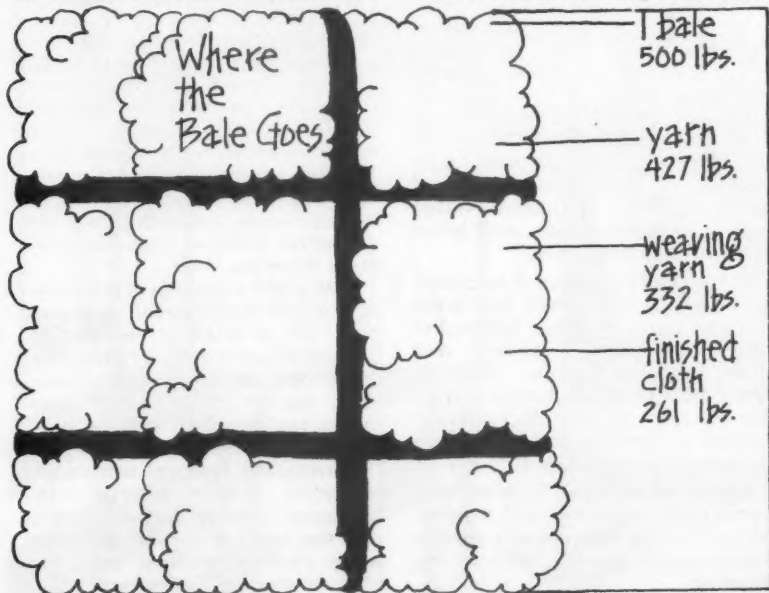
When it first shows up at the mill, a bale of raw cotton tips the scales at an average of 500 pounds. From that amount, take off about 20 pounds for

bagging and metal ties or bands ("tare").

Then subtract 24 pounds of non-lint waste like dust and vegetable matter. Still another 29 pounds of waste are produced in the first stages of the yarn production process. But this is *usable* waste, which is sold mostly to the textile waste industry and eventually ends up as padding and upholstery filling.

By now the bale is down to 427 pounds that will be spun into yarns. Roughly 76 pounds will go for knit goods, 9 pounds for sewing thread, 3 pounds for carpet and tufting yarns, and another 7 pounds for specialty yarns. The remaining 332 pounds, or more than three-fourths of the yarn produced, will be woven into fabric.

Finished cotton fabric stands as the main outlet for cotton fiber with about 261 pounds—more than half the original bale. Unfinished or gray goods, which are raw, unbleached fabrics, account for 29 pounds and



usually wind up in industrial markets.

Yarn-dyed fabrics, where the yarn is dyed before weaving, claim another 35 pounds. "Yarn-dyeds," incidentally, provide the makings for most cotton denim products and account for a mounting share of total cotton use.

The process of weaving yarn into fabric produces still another 7 pounds of waste to be sold to the textile waste industry. Except for waste and tare, however, all of the original bale of cotton ends up in three major end uses—apparel, household, and industrial. Clothing alone makes up about 206 pounds, or about half of total end use.

Another 148 pounds of the original bale end up as household goods while industrial uses claim 66 pounds. An additional 36 pounds of usable textile waste find their way indirectly into both household and industrial products.

PRODUCTIVITY BACK UP IN '75

You can't accuse the Nation's farmers of a bad performance in 1975. After a poor crop year in 1974, farm productivity—or output per unit of input—rebounded 6 percent, reflecting improved growing conditions and more efficient use of resources in most major farming regions.

Farmers managed to produce 3 percent more than in 1974, while using 2 percent fewer inputs. This came about with an 11-percent spurt in crop production, which more than offset a 6-percent decline in the livestock sector.

Paced by a record corn crop, the feed grain harvest jumped 22 percent over 1974. Three other crop groups climbed to new production highs: Sugar output rose 25 percent, food grains 18 percent, and fruits and nuts 6 percent. Oilseed output shot up 19 percent.

Farmers used 7 percent more cropland for crops than in 1974—around 367 million acres. Crops were harvested from 336 million acres, the most since 1955. Total acres required for farm exports reached a new peak of 100 million.

Meantime, yields rebounded an average of 9 percent across the country. All major crops registered yield increases ranging from 3 percent for cotton and barley to 21 percent for corn. Soybeans alone, however, attained record yields.

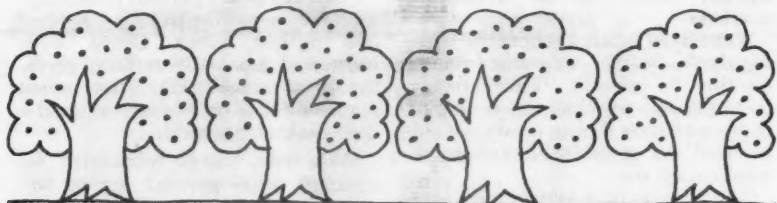
Despite good yields, potential crop production in 1975 was not fully realized, largely because farmers sharply cut back on fertilizer use for the first time in nearly 20 years. Blamed were high fertilizer prices, as producers backed off about 6 percent on nitrogen applications, 12 percent on phosphate, and 12 percent on potash.

Also down were total hours worked on U.S. farms. Continuing a long-term decline, total hours devoted to farmwork slipped 3 percent in 1975 to 5.3 billion. Crop production took 2.9 billion hours, livestock 1.7 billion, and overhead and other chores, 0.7 billion hours.

The overall reduction in the amount of labor used on U.S. farms, coupled with sharply increased farm output, produced a dramatic rise in farm labor productivity. The farm labor force of 1975 was 7 percent more productive than a year earlier, and 26 percent more productive than in 1970.

Though fewer total hours were spent in farmwork in 1975, farmers made increased use of mechanical power and machinery—the only farm input to rise that year. On average, producers paid 23 percent more for farm equipment than in 1974.

All remaining farm inputs, except real estate, decreased in 1975. While the drop in fertilizer sales was most noticeable, farmers also bought less feed, seed, and livestock inputs.



THE TREE PLANTER'S TIMESAVER

The ice storm that ravaged Michigan fruit orchards last March left behind a massive replanting job. But setting in new trees may be less of a chore thanks to a new mechanical fruit tree planter developed by scientists with USDA's Agricultural Research Service (ARS) in East Lansing. In early tests, the planter—along with a tractor and three people—planted 500 trees an hour. Under prevailing methods, it takes five people all day to plant that many trees. To design the new machine, scientists combined the best features of four homemade tree planters already in use. Generally these machines did portions of the planting job well, but didn't measure up in overall performance. The pilot machine works by opening a trench in either sod or cultivated land into which a worker places a seedling—the only operation done by hand. The machine then closes the trench and compacts the soil around the tree's base.



Workers check over nursery stock as they load up the new planter for a run through the orchard.

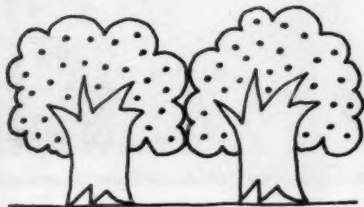
Scientists estimate the mechanical planter works eight times faster than conventional methods.



Above: The best features of several tree planters were combined into this machine, which can plant as many as 500 trees an hour.



Left: The planter opens a trench until the tree is placed, then closes the trench, compressing the soil with its angled wheels.



SURVEYSCOPE

To give our readers a clearer picture of the vast scope of SRS activities, *Agricultural Situation* presents a series of articles on special surveys undertaken in various States. While these are not national surveys, they are important to the agriculture in individual States.

"In late 1975," claims Horace Mayes, Statistician in Charge of the Arizona Crop and Livestock Reporting Service, "Arizona sprang out of nowhere to become the Nation's No. 2 producer of 'spaghetti wheat.'"

Mayes, whose office released its first estimate of durum wheat production last May, explains the turn of events this way: "In early 1975, following poor crop prospects abroad, foreign buyers began offering very attractive contracts for U.S. durum wheat, which is used almost entirely for pasta products.

"Arizona growers responded by

planting some 325,000 acres, versus no more than 30,000 the year before."

Producing durum wheat was an altogether new experience for most Arizona growers, but by and large, their crop met the standards required by foreign buyers—mainly from Italy and Algeria—and all contracts were filled.

Fitting this sudden surge in durum output into SRS's national crop estimating program posed some new problems for Mayes' office. Since Arizona had never made a separate estimate of durum production, the State had no historical basis for



Not usually a durum wheat State, Arizona became the Nation's No. 2 producer this year. . .

comparison with current survey indications.

Then there was a timing problem: Arizona growers plant durum in the fall, unlike the traditional durum States that plant in the spring. SRS makes its first-of-the-season estimate of nationwide durum production in July, based largely on in-the-field observations made the month before.

By that time in Arizona, however, most of the State's acreage has already been harvested and replanted to cotton or grain sorghum. To get around this, Mayes' office conducted a special State-funded survey and published its first production forecast in May.

"Due primarily to local interest in a new crop," says Mayes, "as well as curiosity about how the durum was faring, response to the special survey was good and the Arizona office felt it had released an accurate estimate."

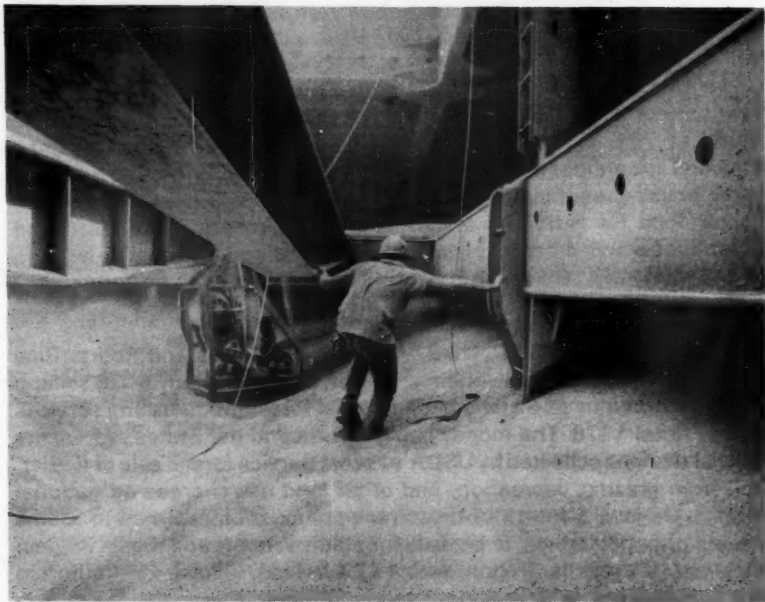
Survey results showed that Arizona growers harvested durum wheat on an estimated 319,000 acres with yields

averaging a hefty 70 bushels per acre.

Total State production worked out to around 22.3 million bushels, or 16 percent of the national tally. Only North Dakota, which harvested 95 million bushels, produced more durum than Arizona this year.

"Whether our big 1976 durum crop is a one-time thing or signals the start of sizable harvests in coming years," reports Mayes, "depends on things like foreign demand, development of varieties to meet the exacting standards of U.S. millers, and the market price of cotton."

"As for export demand, Arizona growers will always be at the mercy of foreign crop conditions. And if cotton prices continue to climb, our farmers may opt for higher cotton yields rather than accept the smaller yields on short-season cotton planted after the durum harvest. Such conditions could very well cause Arizona durum production to fluctuate yearly from virtually nothing to huge crops like the one we harvested this year."



... and shipped nearly all its 22.3 million bushels to foreign buyers for making pasta.

Briefings

RECENT REPORTS BY USDA OF ECONOMIC, MARKETING, AND RESEARCH DEVELOPMENTS AFFECTING FARMERS.

NOT SO BUSY. . . Parched conditions in California even got to its honey bees this year. Though still the Nation's No. 1 honey producer, that State expects to turn out about 16.6 million pounds in 1976, 15% less than a year earlier. In the total picture, SRS looks for honey output among the 20 major producing States to slip 1%. Production from commercial apiaries with 300 or more colonies is projected at 106 million pounds. A small gain in commercial bee colonies this year should be offset by a reduced yield per colony, forecast at 57.6 pounds, 7% below the 1975 average. On the bright side, favorable conditions in second-rank Florida should boost that State's 1976 honey production by nearly a fourth to more than 13 million pounds.

PUTTING SUN POWER TO GOOD USE. . . Heating with solar energy will be put to the test by scientists at the University of Colorado working under an agreement with USDA's Agricultural Research Service. The 1-year project will study the feasibility of using solar power to supply as much as 70% of the heat required by a space-heated building and attached greenhouse. Such a development would permit design of a rural house-greenhouse duo that's economical to heat and able to supply food for residents at low cost. Researchers will operate the greenhouse under actual plant growing conditions through a heating season and keep tabs on both heating and plant growth performance.

MONEY FROM THE WOODS. . . Thirty-nine States and Puerto Rico will divide \$109 million—their share of the more than \$438 million received from the sale and use of national forest products and services during fiscal 1976. The money being returned to the States represents 25% of the fees collected by USDA's Forest Service for the sale of timber, and from grazing, recreation, and other land use charges on national forests. By law, a fourth of those receipts must be returned to States having national forests, to be used for public schools and roads. Biggest recipient this year is Oregon, with \$47.4 million, followed by California and Washington, with receipts totaling \$23.4 million and \$12.7 million respectively.

SAVINGS FROM THE SUN. . . The cost-saving benefits of solar heating will be tested in housing for rural families, reports USDA's Farmers Home Administration (FmHA). Housing projects in Quakertown, Pa., and Weld County, Colo., will be built with funds provided by FmHA and equipped with solar heating systems financed by grants from other Federal or State sources. The costs of heating houses having solar units will be compared with the heating costs of identical houses having only conventional systems.

PLENTY OF POTATOES. . . Domestic potato supplies should be more than ample to cover an anticipated rise in U.S. potato exports during the current marketing year begun last October 1. Main reason is a record U.S. fall potato crop, estimated at 299.8 million hundredweight in mid-October. The increased potato exports come in the wake of a severe drought that's gripped most of Europe, slashing harvests in a number of important producing countries, including France, West Germany, the Netherlands, and the United Kingdom.

ENERGY CUTBACK. . . A recent survey by USDA's Economic Research Service asked consumers in 1,400 households what changes, if any, they made in the ways they used energy in 1975 compared with the year before. Roughly half the respondents said they cut back on home heating and lighting, while 17% used their ovens less and 6% restricted stovetop cooking. A fifth claimed they used air-conditioners less and another 14% lowered settings on hot water heaters. Asked how they would react if energy prices climbed further, many said they would again reduce their use of lighting and home heating.

RED CLOVER DROPS. . . Fewer harvested acres and reduced yields have resulted in a 1976 red clover seed crop that's 14% below last year. SRS's Crop Reporting Board estimates this year's crop at 32.2 million pounds, down from 35.7 million in 1975. Dry weather and increased demand for hay significantly lowered output in Missouri and Illinois, while Indiana, Michigan, Ohio, and Washington all came up with bigger harvests than a year earlier.

MOVE OVER, MEXICO. . . Florida may have regained the competitive edge on Mexico in producing for the U.S. fresh winter vegetable market, reports USDA's Economic Research Service. Along with tariff protection and a shorter shipping distance to eastern U.S. homes, better methods for harvesting and handling produce should bolster the Sunshine State's share of sales.

STEMLESS CHERRIES. . . Scientists with USDA's Agricultural Research Service have found that by spraying cherries with an ethylene-releasing chemical shortly before picking, the fruit can be easily separated from its stems during the actual harvest. Because stems often deteriorate faster than fruit, drying stems pulling away from cherries can damage the fruit, as well as restrict storage conditions and interfere with sizing and packaging operations. Removing stems at harvest should significantly reduce damage to fruit during storing, packing, and shipping, and result in a better quality, more attractive cherry for consumers.

GOOD YEAR FOR CITRUS. . . U.S. citrus production for the 1975/76 season hit a record 14.8 million tons, according to SRS's Crop Reporting Board. Total output advanced 1% from last season, as production of oranges, grapefruit, tangelos, tangerines, and temples all reached new highs. Florida claimed 74% of the orange crop and 70% of the grapefruit. California, with only 22% of the oranges and 10% of the grapefruit, remained the top lemon producer. Value of the 1975/76 citrus crop is pegged at \$1,047 million—7% above last season. Meantime, the Crop Reporting Board's first-of-the-season October 1 forecast released in mid-October points to still bigger crops during 1976/77. Orange output is seen 12% above 1975/76, and grapefruit production 13% higher for a new record. The lemon crop may top last season's mark by 45%.

TIMOTHY TUMBLES. . . It's a good bet that 1976 won't be the year for timothy seed. SRS estimates the current U.S. crop at a record low 9.5 million pounds, a full third smaller than last year and the lowest since records began 37 years ago. Declines for the top three producers show Minnesota down 33%, Missouri 21%, and Illinois 34%. The nearly 58,000 acres expected for harvest this year fall short of 1975's area by more than a fourth. Farmers harvested much of the acreage for hay rather than seed in view of less than ideal weather conditions. Yields should average 165 pounds per acre, off from 183 pounds last year but the same as 2 years ago.

SPANISH-ORIGIN FARMWORKERS. . . It's commonly thought that people of Spanish origin dominate the U.S. hired farm work force. Not so, say researchers with USDA's Economic Research Service, who report that Spanish-origin workers made up only 13% of the 2.7 million people employed as hired farmworkers in 1973. Most farmworkers were Anglo (73%) and 14% were blacks and other ethnic groups. Researchers found that Spanish-origin farmworkers depend heavily on agriculture as their major source of employment and earnings, and also appear to have few viable alternatives to farmwork.

Statistical Barometer

Item	1974	1975	1976—latest available data
Farm Food Market Basket:¹			
Retail cost (1967=100)	162	174	175 September
Farm value (1967=100)	178	187	175 September
Farmer's share of retail cost (percent)	43	42	39 September
Farm Income:			
Volume of farm marketings (1967=100)	111	115	119 August
Cash receipts from farm marketings (\$bil.)	92.6	89.6	95.5 ²
Realized gross farm income (\$bil.)	100.2	98.2	104.8 ²
Production expenses (\$bil.)	72.4	75.5	81.2 ²
Realized net farm income (\$bil.)	27.8	22.7	23.6 ²
Agricultural Trade:			
Agricultural exports (\$bil.)	22	22	1.8 September
Agricultural imports (\$bil.)	10	10	.9 September
Farm Production and Efficiency:			
Farm output, total (1967=100)	108	111	111 October
Livestock (1967=100) ³	106	100	103 October
Meat animals (1967=100)	110	101	102 October
Dairy products (1967=100)	98	98	101 October
Poultry and eggs (1967=100)	106	102	109 October
Crops (1967=100) ⁴	110	122	118 October
Feed grains (1967=100)	93	113	113 October
Hay and forage (1967=100)	104	108	100 October
Food grains (1967=100)	120	141	138 October
Sugar crops (1967=100)	104	130	129 October
Cotton (1967=100)	158	112	138 October
Tobacco (1967=100)	101	111	104 October
Oil crops (1967=100)	127	151	128 October
Cropland used for crops (1967=100)	106	108	108 October
Crop production per acre (1967=100)	103	113	109 October

¹Average annual quantities per family and single person households bought by wage and clerical workers, 1960-61, based on Bureau of Labor Statistics figures

²Annual rate, seasonally adjusted, third quarter.

³Includes minor livestock products not shown in the separate groups below. Cannot be added to gross crop production to compute farm output.

⁴Includes miscellaneous crops not shown in the separate groups below. Cannot be added to gross livestock production to compute farm output.



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